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V1.1 - 2011/04/18

Two notes
AUDIO ENGINEERING

VM-202 User Manual

Manual Version 1.1 - 2011/04/18.

The complete electronic version of this manual, as well as the Torpedo Remote and Torpedo Capture software, are subject to updates. You can download the most recent versions of these products on the following website `http://www.two-notes.com/en/Produits-Two-Notes/Telechargements.html`.

This manual describes the TORPEDO VM-202 and provides instructions for its operation. It is highly recommended to read this document before using the machine. The VM-202 is a professional product hence OROSYS SAS assumes that the user is technically qualified to operate the product, as well as the other devices that will be connected to it. The contents of this manual have been thoroughly verified and it is believed, unless stated otherwise, to accurately describe the product at the time of shipment from the factory.

Two Notes Audio Engineering is a registered trademark of :

OROSYS SAS
145 rue de la Marbrerie, BAL n°6
34740 Vendargues
France
Tel : +33 (0)484 250 910
Fax : +33 (0)467 595 703
Email : contact@two-notes.com
Support : support@two-notes.com
`http://www.two-notes.com`

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Part 1

Foreword

1 Safety instructions

Before using the product, it is necessary to carefully read and to bear in mind the following information. **Keep this document in a safe place as it is important for the protection of the user and the product**. If any malfunction of the machine is suspected, you should always seek the assistance of a qualified technician.

1.1 Risk of electric shock

The warning panel located at the back of the unit lists all the messages related to your safety. All the internal parts of the unit must only be manipulated by a qualified technician.

The triangle symbol with a lightning means that some parts of the product, even when the power is turned off or unplugged, can retain voltages high enough to lead to serious electric shock. Any operation that requires opening the machine should be left to a qualified technician.

1.2 Reader warning

The triangle symbol with an exclamation mark indicates important messages concerning the correct operation of the machine.

1.3 Mains power

Please verify that the voltage required by the machine matches the voltage of your country. If not or if unsure, don't connect the machine to the wall outlet, this could result in damage to the machine and poential injuries to the user.

This product must not be used when there is lightning. In case of several weather with a risk of lightning, unplug the mains power supply to reduce the risk of electric shock and fire.

The mains power cable provided with the machine complies with the standards of the country where you purchased the product. If replacement is needed, please use a standard compliant cable.

1.4 Ground connection

For safety reasons, the machine needs to be plugged to a wall outlet providing a ground connection. If your electric installation does not provide a ground connection or if you are unsure, please ask a qualified electrician for help.

If your mains power cable doesn't match your wall outlet, ask a qualified electrician for help.

Never remove the outer or inner ground connection of the unit to prevent risks of electric shock or fire.

1.5 Mains fuse

The unit comes with a thermal fuse in the mains power input. If replacement is needed, first unplug the mains power cable. Always use a fuse of the same type as the original one.

To prevent risk of electric shock and fire, never try to bypass the fuse by any means

1.6 Safety use conditions

The Torpedo must never be used :

- near a heat source,
- near a flame,
- in the rain,
- in damp areas,
- near any kinds of liquids.

The unit is designed to be rackmounted into a 19" rack unit with 4 screws (not provided).

When transporting the unit, care needs to be taken to avoid any shocks that could cause damage that would require the assistance of a qualified technician.

Never cover or restrict the ventilation openings. Never unplug or deactivate the heat control monitoring system, or you will be exposed to risk of electric shock and fire.

1.7 Cleaning

Always use a dry and soft cloth with no alcohol or solvents for cleaning. Please keep the unit clean and free from dust.

1.8 Maintenance

All maintenance operations must be done by service centers approved by OROSYS SAS or by qualified technicians. Never try to repair the machine by yourself.

2 Declaration of conformity

Fabricant : OROSYS SAS
Category of product : digital audio signal processor
Product : Torpedo VM-202
Test Manager : Guillaume Pille

The Two Notes Torpedo VM-202 is certified to be compliant to the CE and FCC standards :

- EN 55103-1 : 1996 et EN 55103-2 : 1996.
- EN 60065 05/2002 + A1 05/2006.
- FCC Part 15 : 2008.
- ICES-003 : 2004.

3 Content of the package

The shipped package contains :

1. One Torpedo VM-202 unit in a protecting sleeve,
2. One mains power cable,
3. One USB cable,
4. One owner's manual.

The complete electronic version of this manual, as well as the Torpedo Remote and Torpedo Capture software are subject to updates. You can download the most recent versions of these products on the following website `http://www.two-notes.com/en/Produits-Two-Notes/Telechargements.html`.

4 Warranty

OROSYS SAS warrants that this TWO NOTES AUDIO ENGINEERING product shall be free of defects in parts and workmanship when used under normal operating conditions for a period of two (2) years from the date of purchase. This warranty shall apply to the original purchaser when purchased from an Authorized TWO NOTES AUDIO ENGINEERING dealer.

IMPORTANT: PLEASE RETAIN YOUR SALES RECEIPT, AS IT IS YOUR PROOF OF PURCHASE COVERING YOUR LIMITED WARRANTY. THIS LIMITED WARRANTY IS VOID WITHOUT YOUR SALES RECEIPT.

Defective products that qualify for coverage under this warranty will be repaired or replaced, (at OROSYS SAS's sole discretion) with a like or comparable product, without charge. In the case that warranty service is required, Please contact your authorized TWO NOTES AUDIO ENGINEERING dealer in order to obtain an RMA to return the complete product to the Authorized TWO NOTES AUDIO ENGINEERING Service Center closest to you, with proof of purchase, during the applicable warranty period.

Transportation costs to the service center ARE NOT INCLUDED in this limited warranty. OROSYS SAS will cover the cost of standard ground return transportation for repairs performed under this warranty.

This limited warranty becomes void if the serial number on the product is defaced or removed, or the product has been damaged by alteration, misuse including connection to faulty or unsuitable ancillary equipment, accident including lightning, water, fire, or neglect; or if repair has been attempted by persons not authorized by OROSYS SAS.

Any implied warranties, including without limitation, any implied warranties of merchantability or fitness for any particular purpose, imposed under state or provincial law are limited to the duration of this limited warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitations may not be applicable.

OROSYS SAS ASSUMES NO LIABILITY FOR PROPERTY DAMAGE RESULTING FROM ANY FAILURE OF THIS PRODUCT NOR ANY LOSS OF INCOME, SATISFACTION, OR DAMAGES ARISING FROM THE LOSS OF USE OF SAME DUE TO DEFECTS OR AVAILABILITY OF SAME DURING SERVICE.

In case you have to send your TWO NOTES AUDIO ENGINEERING product to any other location, it is of vital importance to retain the original packing materials. It is very difficult to avoid damage if shipping the product without these materials. OROSYS SAS is not responsible for damages to the product due to improper packaging and reserves the right to charge a reboxing fee for any unit returned for service without the original packing materials.

THE FOREGOING CONSTITUTES THE ONLY WARRANTY MADE BY OROSYS SAS WITH RESPECT TO THE PRODUCTS AND IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED

Part 2

Quick start

1 Introducing the Torpedo VM-202

Two Notes Audio Engineering is proud to introduce the VM-202, the second product of the Torpedo series. This product has been developed through several years of technical development, with great attention to the needs of guitarists, bassists and sound technicians confronted to the challenges of miking of instrument amplifiers, on stage or in studio. The Two Notes team took extreme care to design the high-end, professional Torpedo VM-202 rack unit. Our goal is to provide ease of use, reliability, versatility and, above all, perfect audio quality.

The Torpedo technology was created as an answer to the high pressure musicians have to deal with : a lack of time, limited gear availability, loud amplifiers that can't be played at desired volume, and bulky and heavy cabinet to carry. In addition, many musicians are most comfortable with their analog amplifier and effect pedals, and don't want to perform using modeling digital systems, which may compromise their playing style and sound.

For them, the VM-202 offers a "virtual" alternative to the traditional miking, using a technology derived from the convolution reverberation, to achieve a degree of realism never experienced previously with simulators

2 Only a speaker simulation ?

The VM-202 is placed between a preamplifier (guitar, bass, or any product with a line output) and a **recorder** (Digital Audio Workstation, tape recorder) or a sound diffusion system (headphones, monitors).

The role of this unit is to replace the following elements of the traditional guitarist setup :

- the amplifier
- the speaker cabinet,
- the microphone,
- the microphone preamplifier,

to provide a shaped direct signal, the closest possible from a traditional guitar miking, in a professional studio environment.

The preamplifier miking is made in 3 steps with the VM-202 :

1. choose an amplifier, a speaker cabinet and a microphone (Spkr/mic section),

2. place the microphone in the virtual studio (Miking section),
3. shape the signal (Post FX section).

With each step, Two Notes Audio Engineering implements its know-how to propose the most advanced simulations on the market and ensure a total realism both for the musician (playing sensations) and the listener (sound quality).

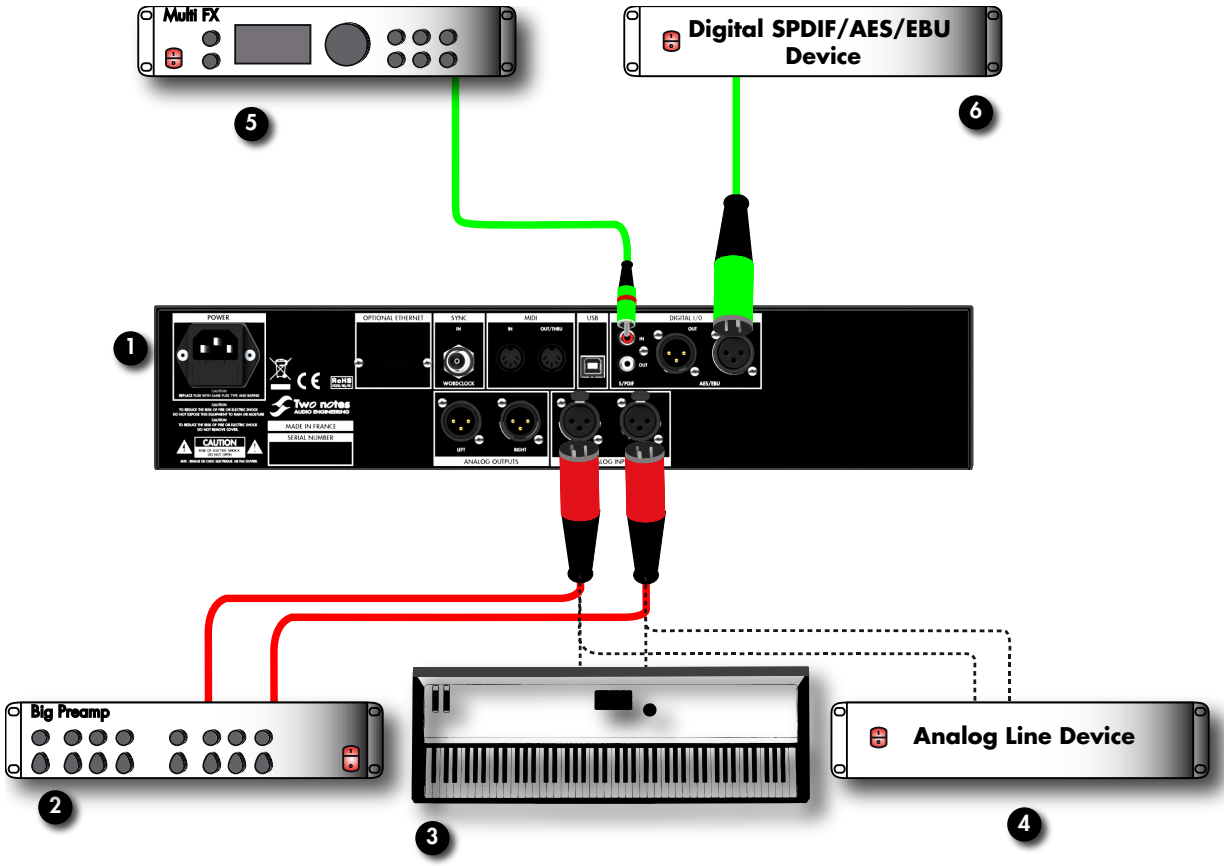


Figure 2.1: Wiring the VM-202

1	TORPEDO VM-202	**3**	Synth, electric piano	**5**	Digital multi-FX
2	Guitar or bass preamplifier	**4**	Analog line device	**6**	Digital S/PDIF/AES/EBU device

2.1 Two simultaneous channels !

The VM-202 receives two input channels (1 and 2) and send two output channels (L and R). Two Notes proposes different routing modes to allow the unit to interface with other stereo, mono or dual-mono products (two independent channels).

With the VM-202, you have two simultaneous A and B channels, linked or independent. As in a professional studio, you can route these two channels to make a mix of two different systems (tube output, microphone, speaker cabinet), two different instruments miking (a guitar and a bass preamplifier) or a multi-microphones miking process.

2.2 Tube Stage Output

The VM-202 handles any kind of instrument with a line output. When using a guitar/bass preamplifier with other speaker emulators, the guitarist/bassist may miss the power amplifier's contribution to the overall sonic texture. Many musicians get their sound from a particular use of this element and this possibility is present in the VM-202. To do this, Two Notes developed an original tube stage modeling, giving you the choice between 4 different tube models in Push-Pull or Single Ended configurations. You can push this tube stage like a conventional amplifier and look for this subtle yet particular distortion. If the VM-202 is used as a super-DI for keyboards, this feature, developed for guitarists and bassists, is also very interesting to warm-up the sound of a synthesizer, organ or a digital piano.

2.3 The Torpedo technology

The Torpedo technology was created as an answer to the high pressure musicians have to deal with ; a lack of time, limited gear availability, loud amplifiers that can't be played at desired volume, bulky and heavy cabinet to carry. In addition, many musicians are most comfortable with their analog amplifier and effect pedals, and don't want to perform using modeling digital systems, which may compromise their playing style and sound. Two Notes developed a unique technology based on an adaptation of convolution techniques. Starting with a measure of a real cabinet + microphone setup, the Torpedo VM-202 can accurately reproduce the system as it was measured, as well as the microphone position in space and the natural distortion of the loudspeakers. To take fully advantage of these digital algorithms, the highest quality audio design assures a perfect analog-to-digital conversion and a huge dynamic range to retain the ultimate playing experience.

This product has been thoroughly tested in professional studio and stage environments and is the alternative many musicians were waiting for professional sound capture of their amplified instruments. The VM-202 will give you the elusive sound of the greatest recording studios and producers, every time, everywhere.

2.4 Section Post FX

During a guitar/bass sound miking process, it is common to apply some essential processes on the signal before sending it to the recorder or the front mixing console.

In the VM-202, you will find most of these essential processes that you need to control your sound, whatever the situation and the type of instrument.

- 5-band graphic equalizer with two modes (guitar and bass),
- 1-band exciter to give the sound a certain character, or to add presence, or "air", in the sound,
- a powerful compressor to control the dynamics of the signal.

3 Product description : front panel

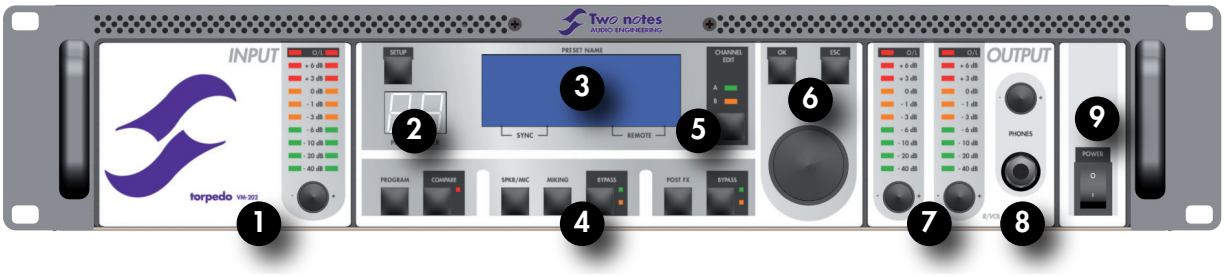


Figure 2.2: VM-202 Front Panel

1	Input gain	**4**	Menu Switches	**7**	Output volume/pan
2	Presets screen	**5**	Channel selection switch	**8**	Headphone volume
3	Main screen	**6**	Navigation Switches	**9**	Power switch

4 Product description : rear panel

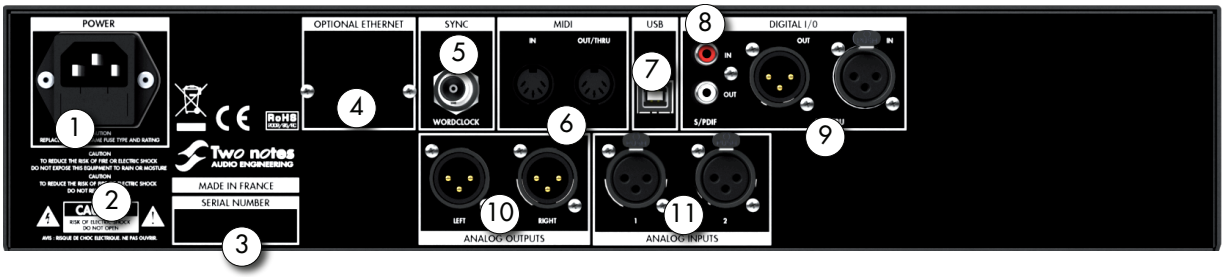


Figure 2.3: VM-202 Rear Panel

1	Mains power with fuse holder	**4**	Ethernet (optional)	**7**	USB	**10**	Analog line output(balanced)
2	Warning messages	**5**	Wordclock input	**8**	S/PDIF In/Out	**11**	Analog line inputs (balanced)
3	Serial number	**6**	Midi In/Out/Thru	**9**	AES/EBU In/Out		

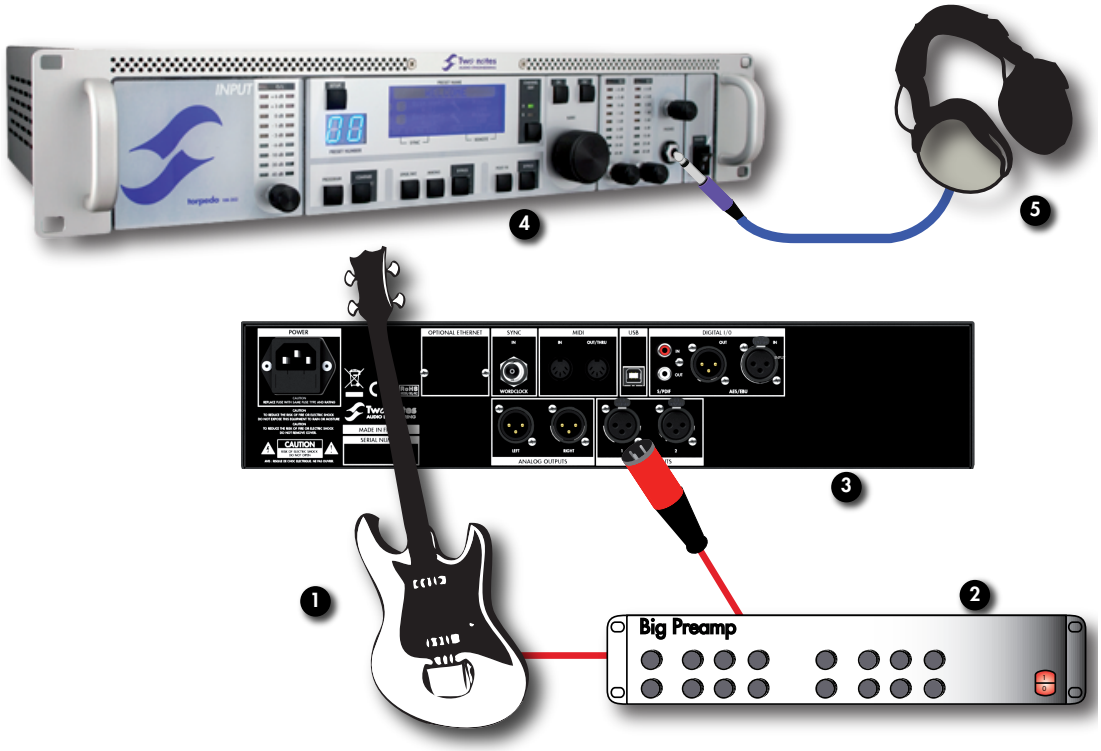
5 TORPEDO VM-202 quick start

The VM-202 is set-up to be connected, right out of the box, to a guitar or a bass preamplifier, and used with headphones. This first simple configuration, creating a line level professional "studio" quality output for your preamp, will allow you to familiarize yourself with the machine within a few minutes.

To achieve this setup, please bring with you the following equipment :

- an electric guitar or a bass,
- a guitar/bass preamp with a line output,
- a pair of headphones.

The VM-202 integrates several routing modes for different hardware configurations (Please refer to the part 3. 1 for more information regarding the routing).. In its basic configuration, the VM-202 is set-up to receive an unbalanced mono signal on the input 1, and deliver a different simulation on the L and R channels.



1 Electric guitar or bass
2 Guitar or bass preamplifier
3 TORPEDO VM-202 - Rear view
4 TORPEDO VM-202 - Front view
5 Headphones

For this test setup, you must bring a guitar or bass preamplifier with a line output and a pair of headphones.

If your preamplifier has only balanced or unbalanced jack 6,35mm (standard 1/4") output but no XLR line output, please use an XLR to TRS jack cable (Tip - Ring - Sleeve, jack with 3 contacts.

Plug your preamplifier to the input 1. (number 11 in figure 2.3). Plug your headphones in the stereo jack output of the VM-202 (number 8 in figure 2.2 2.2). Finally, plug your preamplifier and the VM-202 to the wall outlet and turn them on.

The VM-202 starts on the test preset 00. Now the input and output gain must be set up. The SGA (Safe Gain Adjustment) being activated by default, a 6 steps method to quickly and easily set up these gain settings is presented here :

1. Turn off the volume of the headphone output, and of any devices connected to the analog or digital outputs of the VM-202.
2. Set the input gain to its maximum value (+12dB).

3. Turn up at its maximum the volume of your preamplifier and play for a few seconds. Turn up the input gain of the VM-202 in order to see at their maximum the orange LED (0dB). If the volume of the preamplifier is high, you can see the message "**gain reduction**"on the screen, meaning that the machine adapts the volume to avoid clipping. The message disappears when done, usually in a few seconds.
4. Play a few seconds, in order to let the unit adapt the output volume.
5. Turn up the headphone output volume to a confortable level.

Ideally, the output volume of the preamplifier will be adjusted to have an input gain near 0 dB. If you use a stompbox before the VM-202, it may be necessary to insert a direct box between both devices.

The settings of the output gains/volumes are by default the same for all presets. Thus, you can adjust these parameters depending on the presets. Please refer to 4. 4

5.1 Navigation with the VM-202

You can now scroll the presets with the navigation knobs (number 6 in figure 2.2).

"NAVI" knob	Increment (decrement) a preset parameter (number)
"OK" knob	Validate a parameter modification Enter a menu
"ESC" knob	Cancel a parameter modification Sortir d'un menu
Touche "CHANNEL EDIT A/B"	Select A or B channel for edition

For example, use the "'NAVI"' knob to change the preset number and press "OK" to select it.To edit a channel, use the CHANNEL EDIT knob and select it. The edited channel is indicated by a green LED (Channel A) and an orange one (channel B). **After maintaining pressure on this knob, the edited channel is in SOLO mode**. In other words, whatever the routing modes, you will only hear the selected channel. To get out the SOLO mode, use again the CHANNEL EDIT knob.

in a few minutes you have prepared your system to silent performance with headphones, but also to stage sound miking (through the analog outputs) or to studio recording (through the AES/EBU or S/PDIF outputs).

Part 3

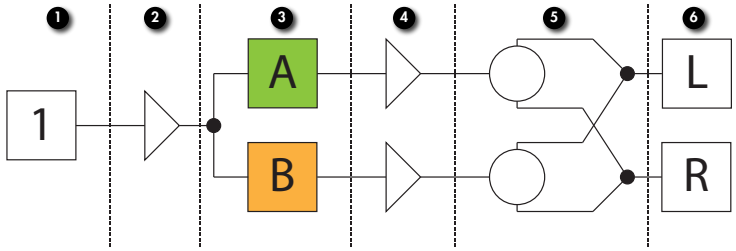
Connecting the Torpedo VM-202

The VM-202 offers a solution for silent and quality sound pick-up in many situations. The following illustrations show the most common applications the VM-202 has been created for.

1 Routing the Inputs/Outputs

The VM-202 is a dual channel processor accepting mono or stereo input signals that can be treated as independent or linked. The following illustration presents the various elements and how there are configured.

- Inputs are illustrated by **1** ou **2**
- The simulation channels are illustrated by **A** ou **B**
- Outputs are illustrated by **L** ou **R**



1 Input **2** Gain **3** Simulation Channel **4** Volume **5** Pan **6** Output

The different input/output modes are described in the table 3.1 and the 9 different routing modes are illustrated in table 3.2. To modify the routing configuration, please refer to part 4. 4.2. Please note that the default routing mode is MONO to DUAL MONO.

Inputs routing		
	Input "mono"	Input 1 is activated, the potentiometer controls the input gain Example : Guitar/bass preamplifier with a mono output
	Input "dual mono"	Inputs 1 and 2 are activated, separate gain for each channels example : 2 different preamplifiers (guitar and bass) independently used for the guitar/bass miking process
	Input "stereo"	Inputs 1 and 2 are activated, same input gain for both channels Example : Keyboard, synthetizer, stereo multi-effects, to use the VM-202 as an effect, re-miking
Outputs routing		
	Output "Dual Mono"	L and R outputs are independent, both output potentiometers are assigned to each channel volume (please refer to part 4. **??**) Example : multi-microphones miking process from a mono input or separated instruments with different inputs
	Output "Mix"	L and R outputs are linked, on each one, you can set up a mix between both A and B channel. Example : Send to L a majority of channel A with a touch of channel B (90/10) and send to R a 50/50 mix, you now have two distinctive sounds coming from the same simulations .
	Output "Pan"	L and R outputs are linked, the left potentiometer is assigned to the volume and the right one to the placement of A and B simulations. Example : Position in the stereo space of two sources processed by the VM-202, best routing when using with headphones.

Table 3.1: Input/Output modes

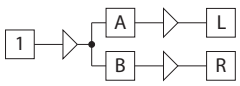
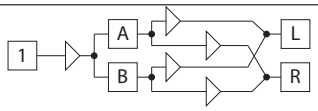
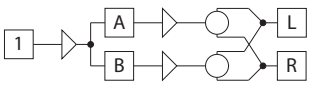
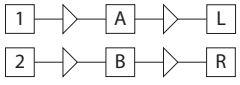
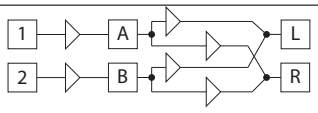
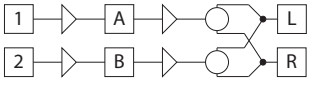
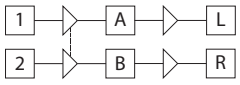
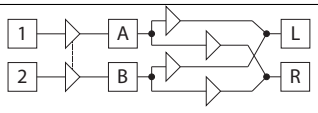
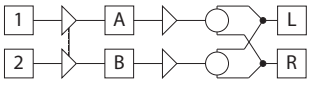
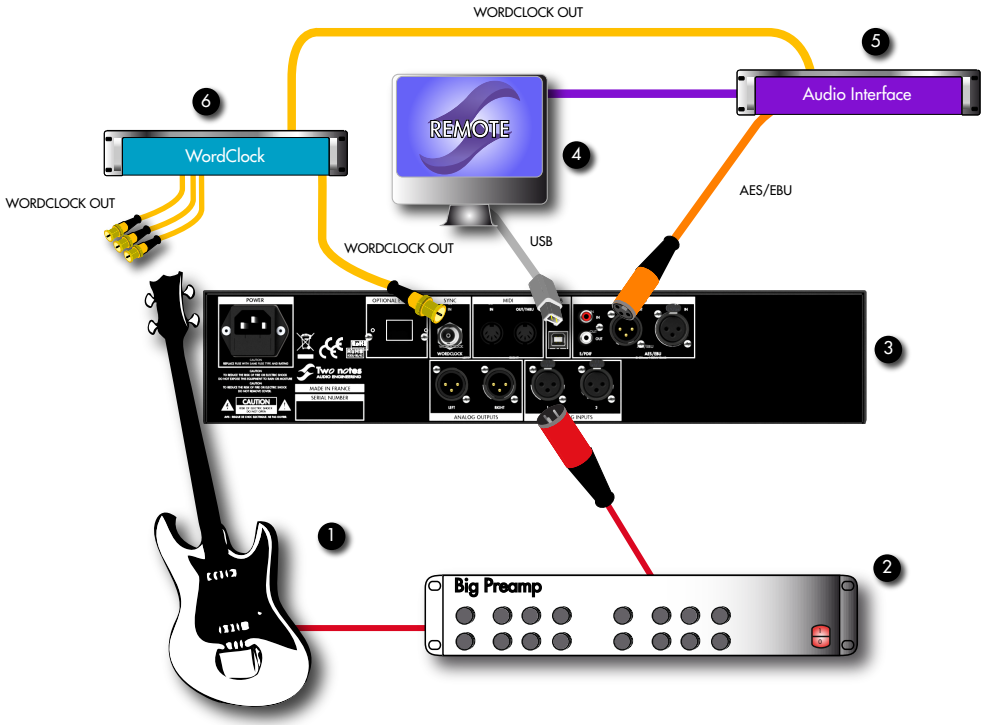
Input/Output	Dual Mono	Mix	Pan
Mono			
Dual Mono			
Stereo			

Table 3.2: Routing table

1.1 VM-202 integration

1.2 In the studio

The VM-202 has applications in the studio for either analog or digital recording. This part of the manual focuses on digital recording.



1	Guitar or bass	**3**	TORPEDO VM-202	**5**	Audio interface
2	Amplifier	**4**	DAW	**6**	Master Clock

The VM-202 is here an analog-to-digital converter, clocked by a wordclock, connected to a DAW through the AES/EBU connection or SPDIF connection for sampling frequencies from 44,1 kHz to 96 kHz. The VM-202 clock can be set as master or slave.

In master mode, the VM-202 generates its own clock, you can choose the input/ouput frequency. In slave mode, you can sync the VM-202 with the AES/EBU or the S/PDIF signal, or with the Wordclock input.

We recommend to install the VM-202 in **slave mode**: this way you will be able to sync the VM-202 with your sequencer/recorder by selecting the working frequency in your project.

Please note that the internal working frequency in the VM-202 is always 96 KHz whatever the selected sync frequency.

1. Check that your digital interface is configured in master mode.
2. In the setup menu of the VM-202, select sync, SPDIF, AES/EBU or Wordclock to indicate the machine's sync source. (for any further details, please refer to part 4. 4
3. Connect a SPDIF or AES/EBU cable from the digital interface OUT to the VM-202 IN, or a wordclock cable from your master clock. On the Torpedo idle menu, you must see the indication "Lock".
4. Connect a SPDIF/AES/EBU cable from the VM-202 OUT to the digital interface.

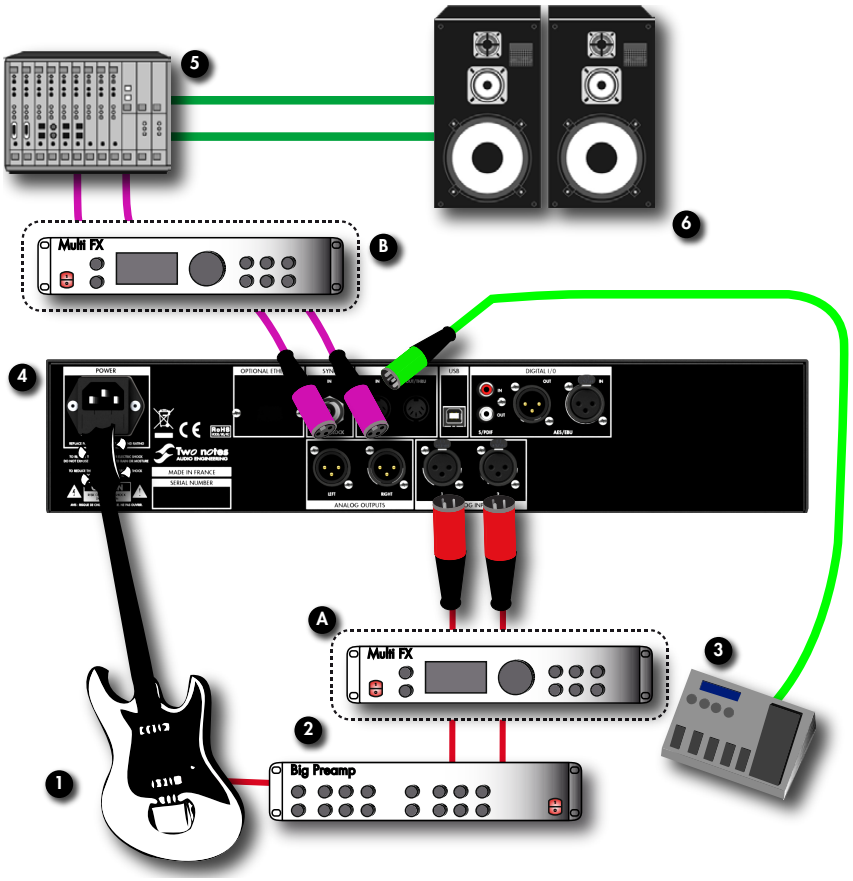
5. In your digital audio workstation (DAW) software, select the digital input for recording (please refer to the user manual of your digital interface/software). You should hear the signal coming from the VM-202.

You get an instant control over all the parameters of the VM-202 through the **USB connection**. It is also useful to upload firmware updates, for preset backup, and to load new cabinet simulations. All of these functions are addressed through the stand-alone **Torpedo Remote**.

1.3 On stage

On stage, we principally use analog inputs/outputs, which are for the moment, the most used in this context. This configuration supposes that the musician listens to the VM-202 through a monitor system.

The guitar/bass preamplifier is plugged into the VM-202. It is also possible to insert an analog/digital effects processor before the VM-202 (A position, closed to the effects loop placement) or after (B position, like in a studio).



1	Guitar or bass	**3**	MIDI Floorboard	**5**	Mixer	**7**	FX loop equivalent
2	Amplifier	**4**	TORPEDO VM-202	**6**	PA	**8**	Studio FX equivalent

Note that the musician can, with a MIDI floorboard, control the parameters (CONTROL CHANGE) and/or the presets (PROGRAM CHANGE) of the VM-202. Please refer to part 5 for complete MIDI implementation.

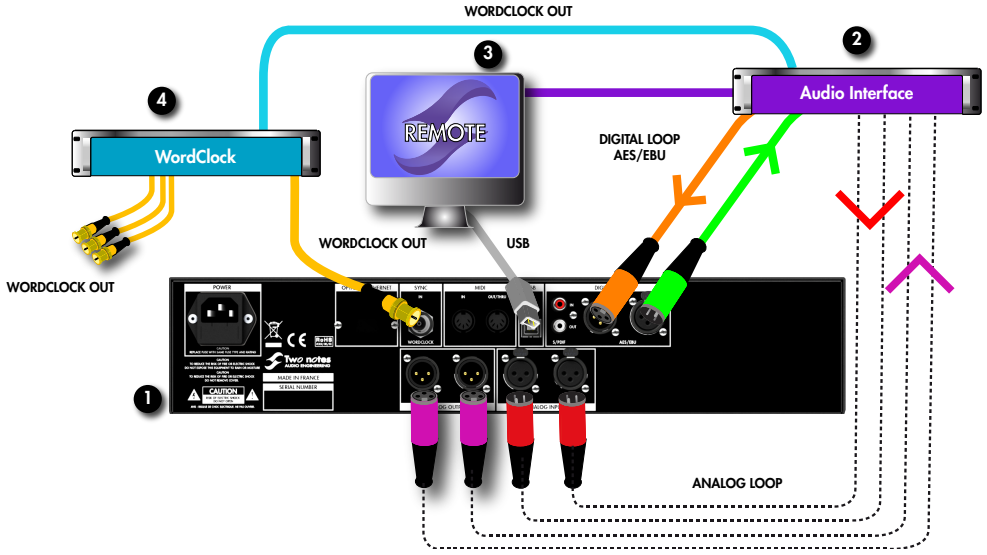
Note about the effects position : depending on where you place the effect (after the guitar, in the amplifier effects loop, in front mixing console after the miking) you will obtain very different results. The VM-202 allows you the usual effects placements, with an evident simplicity to set up a studio configuration (B position), ie with the effects after the sound miking process. If there is no absolute rule, we find that the most common configuration is the following one :

- Distortion effects : between the guitar and the preamplifier
- Wah effects : between the guitar and the preamplifier or in the effects loop (A position)
- Modulation effects (chorus, phaser) : effect loop (A position) or after the miking (B position)
- reverb effects : effect loop or after the sound miking

1.4 Dry recording and re-miking

For recording, a particular configuration allows to take full advantage of the great flexibility of the VM-202. This particular way of connecting the machine allows you to rework a recording after it's been recorded.

The "reamping" techniques are already known (recording a guitar or bass through a DI and sending this signal into an amplifier), we are going to talk here about something we call "re-miking".



1 TORPEDO VM-202 **3** Audio Interface
2 DAW **4** Master Clock

This is done in 2 steps :

1. Dry recording of the preamplifier (simulation bypassed, or using the "PRE-SIM OUT" output
2. Using the Torpedo VM-202 like an external processing unit into a digital loop through the AES/EBU or the S/PDIF I/O. This way, you can choose where you want to place the cabinet and the microphone after the sound miking process.

You can configure the VM-202 to get simultaneously a dry signal (without simulation) on the first output and a processed signal on the second one. The musician retains his familiar playing sensation. To do this, you will choose the routing modes "mono"/"dual mono"/"stereo" to "separated and bypass the simulation and the post FX section on one channel.

To achieve the "re-miking", you can simply create a numeric loop as described paragraph 1.2, in other words inject the dry digital/analog signal into the VM-202, simulate the miking process and then send a digital signal to your recorder.

You may certainly find out new ways to use the Torpedo VM-202. Don't hesitate to share your ideas on the Two Notes forum : `http://www.two-notes.com/forum/`

Part 4

Configuring and using the Torpedo VM-202

1 The VM-202 interface

The VM-202 parameters are organized in menus, accessible by different switches and knobs.

Three kinds of controllers are provided :

- four rotary encoders : input gain, output volume, navigation (NAVI).
- eleven switches : menus SETUP, PROGRAM, COMPARE, SPKR/MIC, MIKING, POST FX, two BYPASS, CHANNEL EDIT, OK, ESC.
- one potentiometer : controls the headphone output volume.

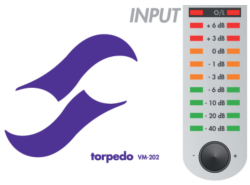
Every action is displayed on the main screen of the unit (number 4 in figure 2. 2.2) or on the LEDs near the knob (CHANNEL EDIT, COMPARE or BYPASS). You can also check that what you do has an impact on the unit. The two-digit display (number 3 in figure 2. 2.2) lets you know the current preset number.

Figure 4.1: VM-202 idle screen

1	Preset Name	**3**	Channel B	**5**	Output Sampling Frequency	**7**	USB Sync
2	Channel A	**4**	Digital Sync	**6**	MIDI signal		

In the following paragraphs, we will illustrate all the commands and menus available from the left to the right of the unit by indicating the corresponding figure 2. 2.2.

2 Input gain control



This encoder controls the input gain of the unit. The VM-202, being a digital product, it is absolutely critical to avoid any saturation of the input signal at the risk of considerably reducing the audio quality. The input gain setting is stored as digital data and like all the parameters in the VM-202, and can either be set up globally or saved with each preset.

The input gain adjustment must be done with input signal present at the input selected (analog or digital). The "IN" label at the upper right corner of the main screen indicates the current input gain value. The input bargraph gives you a visual indication of the input signal amplitude.

For optimum quality, we advise to keep the peak levels of the input signal at a maximum of -6dB on the bargraph.

If you have to apply a high input gain, your input signal is probably too low. A too high input gain will reduce the signal-to-noise ratio and degrades overall performances of the VM-202.

If you notice a drop in the sound volume and a "Gain Reduction" display on the screen while you play, the "Safe Gain Adjustment" is certainly activated. Report to 5. 4 section for more information.

3 Main control panel

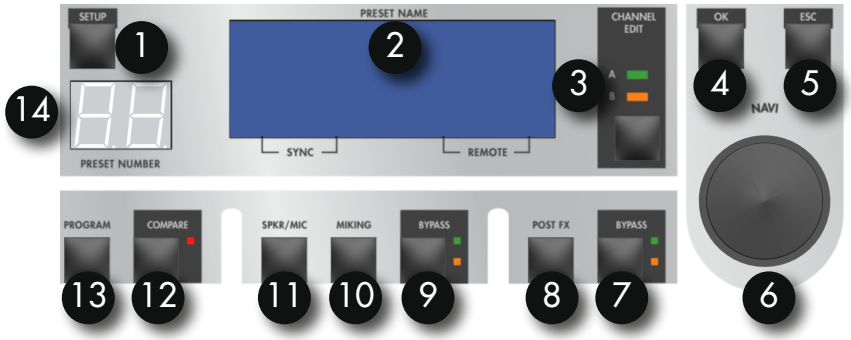


Figure 4.2: VM-202 control pannel

1	Global parameters	**5**	Escape	**9**	Simulation bypass	**13**	Program menu
2	Graphical display	**6**	Navigation	**10**	Miking menu	**14**	Preset number
3	Channel select	**7**	FX bypass	**11**	Cabinet and microphone menu		
4	Validation	**8**	Post FX menu	**12**	Compare		

The VM-202 control panel includes the knob and switch controls giving access to the machine or sound parameters.

You access a menu by pressing the corresponding switch. The navigation encoder has different functions :

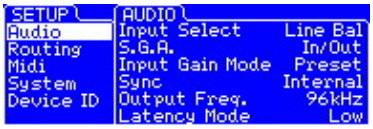
- scrolling the presets if you are on the idle screen,
- scrolling the parameters if you are in a menu screen,
- modifying the parameter that you selected.

To access to a parameter setting or to validate it, press the "OK" switch. To cancel a change in the parameter setting or to go back to the parameters selection, press the "ESC" switch.

4 SETUP

The SETUP menu is where you configure the unit. The parameters set up here apply globlly to all the presets and are retained when the VM-202 is turned off.

4.1 Audio

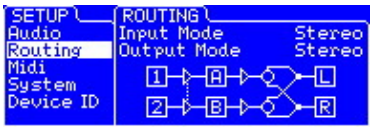


- **Input Select** : "Line Bal" or "Line Unbal" to use the balanced or unbalanced line input, "AES/EBU" or "S/PDIF" to select the digital inputs.

- **SGA** : The Safe Gain Adjustment is an automatic gain reduction function developed by Two Notes Audio Engineering. The purpose is to avoid as much as possible any clipping of the digital input or output stages resulting from a wrong input gain or output volume setting. If a high level causes the input to saturate, the SGA function will reduce the gain value until the saturation stops. In cases where the high level peak is not supposed to happen again and the volume now seems too low, you will have to manually turn up the gain as desired. The SGA can be activated at the input ("In"), the output ("Out"), both ("In/Out"), or deactivated ("Off"). This function has two main advantages : adjusting the gains very quickly, and protecting a live installation against volume variations leading to saturation during the show.
- **Input Gain Mode** : You can adjust the gain globally (GLOBAL) or linked to a preset (PRESET). In the second case, you need to adjust, for each preset, the input gains and the output volumes. You will be able to compensate output volume differences between different units (or different preamplifier channels) by allocating a preset with its own gain/volume configurations.
- **Sync** : The VM-202 can be synchronized with an external clock ("Wordclock") or by the input digital signals ("S/PDIF" or "AES/EB"). If you select an external clock sync, the "Lock" indication at the lower left corner of the idle screen as well as the detected frequency ("Output Freq.") in the SETUP menu will appear when the VM-202 is actually locked to the external signal.
- **Output Freq.** :Indicate the frequency of the VM-202 digital outputs. The analog outputs always run at 192 kHz.
- **Latency Mode** : in Low latency Mode, the latency is reduced to 3ms, but you can no longer access the Overload parameter in the miking menu.

4.2 Routing

In this menu, you can set up the VM-202 routing. For more details, please refer to descriptions part 3. 1

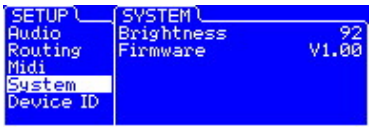


- **Input Mode** : routing inputs choice
- **Output Mode** : routing outputs choice

4.3 Midi

- **Channel** : Select here the MIDI Channel you want the VM-202 to respond to. When "All" is selected, the VM-202 responds to all the channels (omni mode). All the signals received at the MIDI input are sent on through the "MIDI OUT/THRU" output.
- **Control Change** : "On" position means that the VM-202 responds to CONTROL CHANGE messages
- **Program Change** : "On" position means that the VM-202 responds to PROGRAM CHANGE messages

4.4 System



- **Brightness** : Set the brightness of the display.
- **Firmware** : Gives information about the current firmware version in the unit.

4.5 Device ID

- **Device ID** : This menu lets you give an identifying name to your machine. You will have to give different Device IDs to several machines connected simultaneously in USB to the same computer if you want to control them with the Torpedo Remote software. Move through the alphabet using the "NAVI" knob and select the letters with "OK". **after a change in the Device ID, you will have to reboot the VM-202**

5 PROGRAM

In this menu you can save and move the VM-202 presets.

5.1 Save

- **Save** : Press "OK" to display the current preset saving screen. Choose the destination amongst the 100 at your disposal, using the "NAVI" knob. Press "OK" again to save the preset.

5.2 Name

- **Name** : Here you can give a name (10 characters maximum) to your preset. Move through the alphabet using the "NAVI" knob and select the letters with "OK".

6 COMPARE

The "COMPARE" switch controls an evolved comparison function developed by Two Notes Audio Engineering. Think about it as a temporary set of parameters, re-initialized after each startup of the unit. It can be used to quickly and easily compare two sets of parameters. It can be compared to the "Clipboard" filled by the "Copy" function of our personal computers.

1. At startup, the normal set of parameters and the temporary one are the same.
2. You can switch between the temporary set ("COMPARE" LED lit) and the normal one ("COMPARE" LED off) by briefly pressing the "COMPARE" switch.
3. Any modification done on either the normal or the temporary set is saved respectively in the normal or temporary set, without affecting the other. You have two separate sets of parameters at hand.
4. You can copy the normal set to the temporary one by pressing the "COMPARE" switch for about 2 seconds. The "COMPARE" LED flashes, indicating the copy has been done. You can not copy the temporary set to the normal one.
5. Any changes made in a parameters set (normal or temporary) are automatically saved in this set without affecting the other. You have at your disposal, two different and separated parameters sets.

Let's consider an example :

1. Make sure the "COMPARE" LED is off. Select a preset, do some modifications as desired : you now have a certain set of parameters in the unit.
2. Save this current ("normal") set of parameters to the temporary one (see above). Now the two sets are identical.
3. Do some more modifications, for example change the speaker model. Now the two sets are different : you can hear the difference by switching between the two (see above).

Another interesting way to use this function : the temporary set of parameters isn't dependant of a particular preset. When on the normal set of parameters, if you load a preset, the content of the temporary set will not be affected. Thus, you can copy a preset in the temporary set, then load a second one, and compare the two.

This forms a simple yet powerful way of comparing either a full preset to another, a modified preset to the original one, or only a change in a single parameter.

7 SPKR/MIC

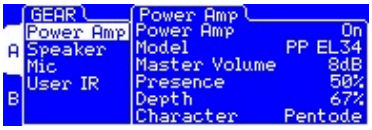
In the "SPKR/MIC" menu, you can choose which simulated speaker cabinet and microphone you want to use. For each channel, you have 8 tube stage configurations, 8 microphones and over 30 speaker cabinets available. Each month, Two Notes Audio Engineering offers a new speaker cabinet available for download at http://www.two-notes.com

Furthermore, the "User" parameter gives you access to your own impulse responses (.tur files, measured with the Torpedo Capture software), to impulse responses shared by other VM-202 users, or to "standard" third party impulse responses (.wav or .aiff files), either downloaded or purchased.

This function expands the sonic and creative possibilities to infinity, don't hesitate to use audio files with no direct link to speaker measuring, you'll experiment totally new sonic textures.

To add those impulse responses in the VM-202, please refer to the Torpedo Remote user manual.

7.1 Power Amp



- **Power Amp** : Activate the power amplifier simulation by turning "On" this parameter.
- **Model** : Choose the circuit topology (Push Pull ou Single Ended) and the tube models (6L6, EL34, EL84, KT88) used by the simulation
- **Master Volume** : Set up the output volume of your virtual power amplifier.
- **Presence** : this setting affects on the tube stage frequency .

7.2 Speaker and Mic

- **Speaker** : Determine the speaker cabinet model used for the simulation.
- **Mic** : Determine the microphone model used for the simulation.

7.3 User

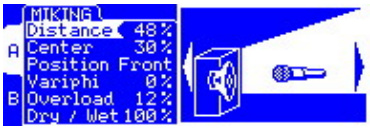
- **User** : Determine the impulse response file used for the simulation. The "U" label indicates that the impulse has been measured (with the Torpedo Capture software) by the user. The "W" label indicates that the impulse has been converted from a wave (or aiff) file. You don't have access to the microphone positioning options when using the User impulses (both "U" and "W"). You have access to the "Overload" parameters only for the "U" impulse responses.

8 MIKING

In the "MIKING" menu, you take the place of the sound engineer. This is where you will find the "sweet spot", the perfect microphone position. You'll also be able to control speaker saturation and balance between simulated and non-simulated sound.

The first two parameters determine the microphone position. You can move the microphone in a trapezoidal plane that you can visualized with the Torpedo Remote software.

8.1 Distance



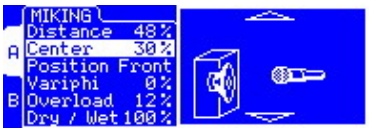
- Determine the distance between the simulated cabinet and microphone. Placing a microphone close to the cabinet will result in a precise sound with a large amount of proximity effect (dependent on the chosen model of microphone).

When you move the microphone away from the cabinet, you increase the proportion of the studio's acoustics (early reflections) in the overall sound.

Furthermore, depending on the cabinet model used, and especially with the ones with multiple speakers, moving the microphone away can bring some higher frequencies back. This is simply due to the directivity of the loudspeakers.

At the maximum position (100%), the microphone is placed 3 meters (10 feet) away from the cabinet.

8.2 Center

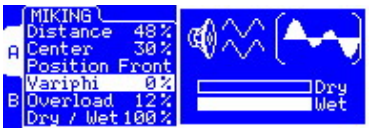


- Determine the distance between the axis of the loudspeaker and the microphone (placed at right angle). The in-axis position (0%) allows the maximum amount of treble, which are highly directional. Moving the microphone away from the axis decreases the treble to the benefit of the bass response. At maximum position (100%), the microphone is placed at the edge of the speaker when Distance is 0%, and 1 meter (3 feet) away from the axis when Distance is 100%.

8.3 Position

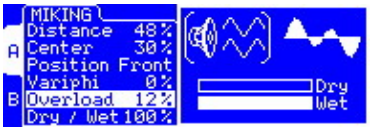
- In standard sound capture, the microphone is usually placed in front of the cabinet. However, placing the microphone behind the cabinet can be quite interesting. The sound is usually softer and darker. This is particularly obvious with closed cabinet, less with open ones.

8.4 Variphi



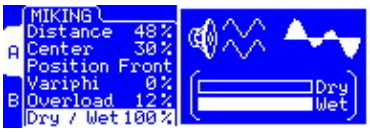
- The Variphi parameter is a one-of-a-kind control, exclusively found in the Torpedo technology. It allows you to modify the frequency content of the signal, using the properties of the sum of two signals with different phase. You are emulating a situation where two microphones are used, and the Variphi parameter controls the distance (hence the phase relationship) between the two microphones. To easily hear this effect, we recommend to start with a crunch/saturated sound on your amplifier and change the Variphi parameter. You will hear a periodic change in the signal with frequency modifications. Using Variphi, you will fine tune the frequency content of the signal, whether you are looking for a "mid-scooped" or a "full" sound. Note that this parameter is always working. The O position is not a 0 value, but a first shift phase value between the first and the second virtual microphone

8.5 Overload



- A loudspeaker is essentially a system designed to faithfully reproduce the sound transmitted by the amplifier. However, a loudspeaker has some particular audio properties, including some dependant to the power applied. The "Overload" parameter reproduces the natural saturation occurring when the loudspeaker is driven too hard. At maximum value, you get the sound of a loudpseaker close to destruction.

8.6 Dry / Wet



- Combine the dry, unprocessed sound, with the simulated one. This parameter is particularly interesting on clean sounds, or to search for new and original sounds.

9 BYPASS

There are two "BYPASS" switches, each associated to a red LED. The left one switches off the Torpedo simulation, the right one switches off the "POST FX" module.

10 POST FX

You carefully prepared your guitar/bass sound in the previous section, it is now time to tailor your guitar sound for mixing, in recording or on stage.

The "POST FX" section brings you some essential tools to quickly get a studio-quality ready-to-mix sound.

10.1 EQ

The first post FX feature is a 5-band EQ. Changing the mode (guitar or bass) shifts the band frequencies to focus on the interesting signal frequencies for the corresponding instrument.

- **EQ Mode** : Off, Guitar or Bass. Please refer to the following tab for references between the band and the cut frequencies in each mode.
- **Low, LMid, Mid, HMid, High** : band frequency, from lowest to highest. Note that a double-click on "OK switches the value to 0

Band	Guitar Mode	Bass Mode
Low	120Hz	50Hz
LMid	360Hz	120Hz
Mid	800Hz	360Hz
HMid	2000Hz	800Hz
High	6000Hz	4000Hz

10.2 Exciter

An exciter is very useful to give a sound a certain character, or to add presence, or "air", in the sound. The integrated exciter will allow you to make these changes.

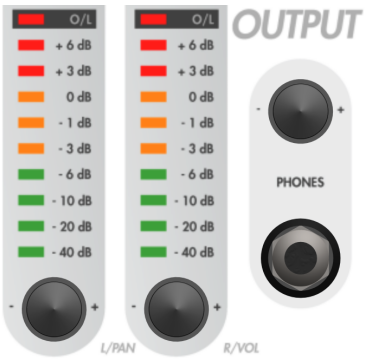
- **Exciter** : Switch the exciter ON or OFF.
- **Gain** : Control the quantity of effect applied to the sound.
- **Freq** : Control the center frequency of the exciter. For example, presence for guitar is usually found at 2 or 3 kHz. Air can be added by placing this frequency at 6 or 8 kHz.

10.3 Comp

Using a compressor will reduce the dynamics of your sound, control transients and can also be used to create special effects, like pumping. The parameters of the Torpedo compressor are equivalent to a standard studio compressor.

- **Compression** :Turn the compressor ON or OFF, and when ON, indicates the level of compression applied to the signal, in dB scale.
- **Threshold** : Controls the signal level above which the compression occurs.
- **Ratio** : Control the ratio of the compression.
- **Attack** : Control the attack time, in milliseconds.
- **Release** : Control the release time, in milliseconds.
- **Make-up Gain** : Control the make up gain added at the output of the compressor.

11 Output volume control and headphone output



Depending on the output routing configuration (refer part 3. 1), you have different configurations (Volume or Pan) assigned to the encoders.
As the VM-202 is a digital audio processor, it is absolutely critical to avoid any saturation of the input signal, at the risk of considerably reducing the audio quality. The output volume or PAN is digital data, like all the parameters in the VM-202, and is saved with the preset. You will have to adjust the output volume for each preset. Please note that output volume depends on the speaker cabinet and microphone used for the simulation, as well as microphone positioning. You may need to readjust the output volume when modifying these parameters.

The output volume adjustment must be done with input signal present at the input selected (analog or digital). The "OUT" label a the upper right corner of the main screen indicates the current output volume value. The output bargraph gives you a visual indication of the output signal amplitude.

For optimum quality, we advise to keep the peak levels of the output signal at a maximum of -6dB on the bargraph.

If you have to apply a high output volume gain, your input signal is probably too low. A too high output volume will reduce the signal-to-noise ratio and degrades overall performances of the VM-202. If you notice a drop in the sound volume and a "Gain Reduction" display on the screen while you play, the "Safe Gain Adjustment" is certainly activated. Report to section 4 for more information.

The "PHONES" potentiometer controls the headphone volume on the 6,35mm (standard 1/4") jack headphone output. This control is placed after the output volume control. A too low output volume setting, offset by a high headphone volume setting, will reduce the signal-to-noise ratio and degrades overall performance of the VM-202.

The power delivered by the headphone output is high enough to remain efficient even when using high impedance headphone. Therefore, it is possible to have very high audio levels with the VM-202 output. **We strongly advise against the use of headphones with high audio levels. The improper use of headphones can lead to irreversible damage to your hearing.**

Part 5

MIDI implementation

Your Torpedo VM-202 can be controlled by MIDI messages (PROGRAM CHANGE and CONTROL CHANGE) sent by a device connected to the "MIDI IN" input (number 6 in figure 2.3. The controlling device can be a foot controller, a keyboard, or a personal computer.

To learn how to send a PROGRAM CHANGE or CONTROL CHANGE message, please refer to the manual of your controller.

The MIDI messages are transmitted to every linked machine. To filter MIDI data received by the machine, you should configure the VM-202 to be on a single (1-16) channel or on "ALL" channels. Please refer to the 4.3 section.

If you have several products communicating via MIDI, you can use the "MIDI OUT/THRU" output of the VM-202, which mirrors all MIDI messages received at the "MIDI IN" input.

1 PROGRAM CHANGE

Every preset in the VM-202 is identified by a corresponding program number. The preset "01" of the VM-202 corresponds to the "01" PROGRAM CHANGE message, so you can access any preset by sending a PROGRAM CHANGE message with the appropriate number.

2 CONTROL CHANGE

The following table indicates the CONTROL CHANGE numbers for each VM-202 parameters, as well as their range and behavior.

Parameter name	A CC♯	B CC♯	Range	Behaviour
SPKR/MIC				
Amp Sim - Bypass	1	40	0 - 1	0 = On ; 1 = Bypass
Amp Sim - Amp Model	2	41	0 - 7	0 = Model ♯0 ; 1 = Model ♯1 ...
Amp Sim - Volume	3	42	0 - 30	0 = 0dB ; 1 = 30dB
Amp Sim - Presence	4	43	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Amp Sim - Depth	5	44	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Amp Sim - Character	6	45	0 - 1	0 = triode ; 1= pentode
Speaker	7	46	0 - ♯Cab -1	0 = Speaker ♯0 ; 1 = Speaker ♯1 ...
Mic	8	47	0 - 7	0 = Mic ♯0 ; 1 = Mic ♯1 ...
User	9	48	0 - ♯User IR-1	0 = User ♯0 ; 1 = User ♯1 ...
Mode	10	49	0 - 1	0 = Speaker+mic ; 1 = User IR
MIKING				
Distance	11	50	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Center	12	51	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Position	13	52	0 - 1	0 = Back ; 1 = Front
Variphy	14	53	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Overload	15	54	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Dry/wet	16	55	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
POST FX				
Low Cut - Bypass	17	56	0 - 1	0 = On : 1 = Bypass
Low Cut - Freq	18	57	0 - 127	Specific mapping to Hz
EQ - Mode	19	58	0 - 2	0 = Off ; 1 = Guitar ; 2 = Bass
EQ - Low	20	59	0 - 40	0 = -20dB ; 20 = 0dB ; 40 = 20dB
EQ - Low Mid	21	60	0 - 40	0 = -20dB ; 20 = 0dB ; 40 = 20dB
EQ - Mid	22	61	0 - 40	0 = -20dB ; 20 = 0dB ; 40 = 20dB
EQ - High Mid	23	62	0 - 40	0 = -20dB ; 20 = 0dB ; 40 = 20dB
EQ - High	24	63	0 - 40	0 = -20dB ; 20 = 0dB ; 40 = 20dB
Exciter - Bypass	25	64	0 - 1	0 = On ; 1 = Bypass
Exciter - Gain	26	65	0 - 127	0 = 0% ; 63 = 50% ; 127 = 100%
Exciter - Freq	27	66	0 - 127	Specific mapping to Hz
Comp - Bypass	28	67	0 - 1	0 = On ; 1 = Bypass
Comp - Threshold	29	68	0 - 63	0 = -63dB ; 63 = 0dB
Comp - Ratio	30	69	0 - 127	Specific mapping to ratios
Comp - Attack	31	70	0 - 127	Specific mapping to ms
Comp - Release	32	71	0 - 127	Specific mapping to ms
Comp - Make Up Gain	33	72	0 - 63	0 = 0dB ; 63 = 63dB
IN/OUT GAIN				
Gain In	34	73	0 - 107	0 = -95dB ; 95 = 0dB ; 107 = 12dB
Volume Out Left Volume	35	74	0 - 107 0 - 107	0 = -95dB ; 95 = 0dB ; 107 = 12dB 0 = -95dB ; 95 = 0dB ; 107 = 12dB
Volume Out Right Pan	36	75	0 - 107 0 - 127	0 = -95dB ; 95 = 0dB ; 107 = 12dB 0 = 100% L ; 63 = C ; 127 = 100% R
ROUTING				
Simulation - Bypass	37	76	0 - 1	0 = On : 1 = Bypass
Post FX - Bypass	38	77	0 - 1	0 = On : 1 = Bypass
Output Mute	39	78	0 - 1	0 = Unmute : 1 = Mute

Table 5.1: VM-202 MIDI implementation

Part 6

Technical specifications

Funtionnalities	
Miking simulation	Cab simulation Microphone simulation On the fly microphone placement Speaker saturation simulation (overload)
Tube stage simulation	Class A or AB 4 different tube models (6L6, EL34, EL84, KT88)
Remote control	Torpedo Remote
Possibility to load your own cab and microphone into the box(User Response)	Torpedo Capture
Technical specifications	
Cab simulation	Up to 50 user speakers Up to 50 Two Notes speakers
Microphone simulation	8 microphones
Presets back-up	Up to 100 presets
Latency	"Normal" mode : 5ms "Low Latency" mode : 3ms
Converter	AD/DA 24 bits / 192 KHz
Internal processing	32-bit float / 96 KHz
S/N ratio	100dB measured
Line Input	2x balances/unbalanced switched by relay, 20KOhms
Line Output	2x balanced pre-simulation, 2x balanced dual mono/stereo
Headphone stereo output	
Digital inputs	stereo AES/EBU and S/PDIF
Digital outputs	stereo AES/EBU and S/PDIF
Synchronization	AES/EBU, S/PDIF or Wordclock
Communication	USB control with the Torpedo Remote software : Mac OS X, Windows XP, Windows Vista, Windows 7 MIDI control : Program Change and Control Change Ethernet : optional
Dimensions	Without the rack ears : 442 x 305 x 89 mm With the rack ears : 483 x 305 x 89 mm
Weight	5,6Kg
Accessories	
	USB cable Power supply cable User's manual Torpedo Remote and Torpedo Capture software available on the Two Notes web-site

Part 7

Technical support

Should you encounter a problem with your Torpedo VM-202 or if you need help on some technical aspects, please note that Two Notes Audio Engineering has developed on-line services to give you fast and efficient technical support. Please consult the website prior to considering sending your product for after-sale service. Should shipping your unit be necessary, please obtain a RMA authorization through your Two Notes Authorized Dealer.

1 Two Notes Website

On the `http://www.two-notes.com/en/` website, you will find :

1. news about the company and the products (news at the homepage),
2. comprehensive information about the VM-202 and its many applications (FAQ),
3. firmware to download (products/torpedo VM-202/download),
4. a new speaker cabinet every month (products/torpedo VM-202/download),
5. the Torpedo Remote and Torpedo Capture software (products/torpedo VM-202/download),
6. an official forum where you can share tips and advice with other Torpedo users (forum).

2 By e-mail

Please contact us at the following address : contact@two-notes.com

3 By phone

Please contact us by phone at +33 484 250 910 (France time).